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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/651,821	08/29/2003	Gaetan L. Mathieu	P116D1-US	9378
50905	7590	12/15/2005	EXAMINER	
N. KENNETH BURRASTON			CHANG, RICK KILTAE	
KIRTON & MCCONKIE				
P.O. BOX 45120			ART UNIT	PAPER NUMBER
SALT LAKE CITY, UT 84145-0120			3729	

DATE MAILED: 12/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/651,821

Applicant(s)

MATHIEU ET AL.

Examiner

Rick K. Chang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 September 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 19-58 is/are pending in the application.
- 4a) Of the above claim(s) 31-33 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 19-30, 34-58 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 19-27, 34 and 51-55 are rejected under 35 U.S.C. 102(b) as being anticipated by Matunami (US 3,952,404).

Matunami discloses patterning a masking material (18 surrounding area around 14 in Fig. 13) to expose (4); creating an interconnection element (20 and 18 covering 13 as well as areas between 13 and 14); 20 is a multi-layer construction (col. 7, lines 33-40) and different metals have different CTE to vibration (a source of heat); Fig. 15 shows removing 18 left side of 14; ultrasonic vibrations (it is inherent to change the magnitude of the vibration to change stress) changes the properties (volume) of the interconnects to separate and bend 18 and 20 from the substrate; it is inherent that heating the interconnect transforms the properties; vibration (generates heat) changes the positions of the interconnect that is a greater distance from the surface of the substrate (1) and this is controlled by the frequency of the vibration; a plated third element 30; redistributing is shown in Fig. 13 where a first contact point 14 located on the left hand side to a different second contact point located next to 15. 20's free end extends over 18 (a masking material).

3. Claims 38-42, 44-50, 55, and 57-58 are rejected under 35 U.S.C. 102(b) as being anticipated by Smith et al (US006264477B1).

Smith discloses in Figs. 8-9 there is no application of external force to transform property of the interconnection element; Fig. 28 shows coupling; Fig. 6 shows pressure connection; see claim 5 for soldering as well as permanent connection; before soldering, interconnection elements makes temporary connections with corresponding contact points. 15 is multi-layer interconnection element (col. 4, lines 49-61) and different materials have different CTE; stimulus (etching) is performed to Fig. 11 to result in Fig. 12;

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 28-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matunami (US 3,952,404) in view of Larson (US 5,160,579).

Matunami fails to disclose patterning an electrophoretic resist material and electroplating the third element material to the exposed surface of the interconnection element.

Larson discloses patterning an electrophoretic resist material and electroplating the third element material to the exposed surface of the interconnection element (col. 2, lines 52-68 and col. 3, lines 1-23).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Matunami by patterning an electrophoretic resist material and electroplating the third element material to the exposed surface of the interconnection element, as taught by Larson, for the purpose of providing fine electrical circuits.

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6. Claims 35-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matunami (US 3,952,404) in view of Smith et al (US006264477B1).

Matunami fails to disclose coupling an electronic component to the free end of interconnection element; testing the device; and providing a die and coupling the interconnection element to a bond pad of the die.

Smith discloses coupling an electronic component to the free end of interconnection element and coupling the interconnection element to a bond pad of the die (Fig. 25). See Fig. 28.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Matunami by coupling an electronic component to the free end of interconnection element and coupling the interconnection element to a bond pad of the die, as taught by Smith, for the purpose of making a CPU.

Official Notice is taken that it is well known in the art to test the device in order to provide working electronic devices that meet the design criteria.

7. Claim 43 is rejected under 35 U.S.C. 103(a) as being unpatentable over Smith et al (US006264477B1).

Smith fails to disclose testing the device.

Official Notice is taken that it is well known in the art to test the device in order to provide working electronic devices that meet the design criteria.

8. Claim 56 is rejected under 35 U.S.C. 103(a) as being unpatentable over Smith et al (US006264477B1) in view of Matunami (US 3,952,404).

Smith fails to disclose heating.

Matunami discloses heating (vibration generates heat).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Smith by heating, as taught by Matunami, for the purpose of separating materials without using harmful chemicals and eliminating cleaning the workpiece.

***Response to Arguments***

9. Applicant's arguments filed 9/26/05 have been fully considered but they are not persuasive. Applicants' concerns are addressed above.

***Interviews After Final***

10. Applicant note that an interview after a final rejection must be submitted briefly in writing the intended purpose and content of the interview (the agenda of the interview must be in writing). Upon review of the agenda, the Examiner may grant the interview if the examiner is convinced that disposal or clarification for appeal may be accomplished with only nominal further consideration. Interviews merely to restate arguments of record or to discuss new limitations will be denied. See MPEP 714.13 and 713.09.

***Conclusion***

11. Please provide reference numerals (either in parentheses next to the claimed limitation or in a table format with one column listing the claimed limitation and another column listing corresponding reference numerals in the remark section of the response to the Office Action) to all the claimed limitations as well as support in the disclosure for better clarity (optional). Applicants are duly reminded that a full and proper response to this Office Action that includes any amendment to the claims and specification of the application as originally filed requires that the applicant point out the support for any

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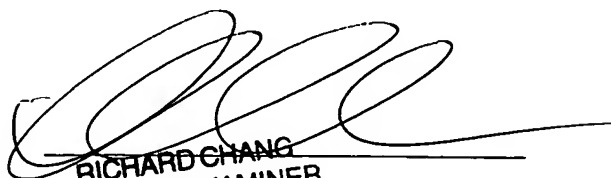
**amendment made to the disclosure, including the claims. See 37 CFR 1.111 and MPEP 2163.06.**

12. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rick K. Chang whose telephone number is (571) 272-4564. The examiner can normally be reached on 5:30 AM to 1:30 PM, Monday through Thursday.

The fax phone numbers for the organization where this application or proceeding is assigned are (571) 273-8300 for regular communications and (571) 273-8300 for After Final communications.

  
RICHARD CHANG  
PRIMARY EXAMINER

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RC

December 12, 2005